Group B Measurement

Task

Fun and fitness

Ali and Conan were a little concerned about their levels of fitness. After talking to their Physical Education teacher for some ideas, they decided they would train at the local athletics track three times a week until their fitness improved. Conan visited the track and found that the measurement at the inside edge of lane 1 for the straight portion was 100 m, and the curved sections at each end had an inside diameter of 64 m. He also discovered that the track had eight running lanes, each 1 metre wide, with lane 1 on the inside.

**1** Draw a diagram of the inside edge of the athletics track, including the dimensions.

**2** If Ali and Conan were running next to the inside edge (i.e. in lane 1), what distance would they run in one lap?

**3** Conan was convinced that he was fitter than Ali and said that he would run on the inside edge of lane 2 for three laps and still finish ahead of Ali running next to the inside edge of lane 1 for the same number of laps. How much further than Ali would Conan be running?

Extension

Their Physical Education teacher told them they needed to run constantly for 20 minutes if they wanted their training to have a positive effect. Also the athletics club management wanted all longer runs to be completed in lane 3 to reduce wear and tear on the inside lanes.

**4** Conan and Ali worked out that each lap in lane 3 would take them approximately 2 minutes.

**(a)** Calculate how many laps they would need to complete.

**(b)** To the nearest metre, what distance would they be covering in the 20 minutes?

Assume that they run on the inside edge of the lane.